

We claim:

1. A catalyst system for olefin polymerization comprising an organic transition metal compound and, as cocatalyst, an ionic compound made up of anions of the formula (Ia),

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where

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the radicals R<sup>1</sup> are identical or different and are each, independently of one another, a radical R<sup>2</sup>R<sup>3</sup>(CF<sub>3</sub>)<sub>2</sub>,

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R<sup>2</sup> is a carbon or silicon atom and

R<sup>3</sup>

is hydrogen, C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>1</sub>-C<sub>20</sub>-fluoroalkyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>6</sub>-C<sub>20</sub>-fluoroaryl, C<sub>7</sub>-C<sub>40</sub>-arylalkyl, C<sub>7</sub>-C<sub>40</sub>-fluoroarylalkyl, C<sub>7</sub>-C<sub>40</sub>-alkylaryl, C<sub>7</sub>-C<sub>40</sub>-fluoroalkylaryl or an SiR<sup>4</sup><sub>3</sub> group, where

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R<sup>4</sup> may be identical or different and is each C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>1</sub>-C<sub>20</sub>-fluoroalkyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>6</sub>-C<sub>20</sub>-fluoroaryl, C<sub>7</sub>-C<sub>40</sub>-arylalkyl, C<sub>7</sub>-C<sub>40</sub>-fluoroarylalkyl, C<sub>7</sub>-C<sub>40</sub>-alkylaryl or C<sub>7</sub>-C<sub>40</sub>-fluoroalkylaryl,

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and Lewis-acid cations or Brönsted acids as cations.

2. A catalyst system as claimed in claim 1, wherein the cocatalyst comprises, as Lewis-acid cations, cations of the formula (Ib),

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where

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M<sup>1</sup> is an element of groups 1 to 16 of the Periodic Table of the Elements,

Q<sub>1</sub> to Q<sub>z</sub> are singly negatively charged groups such as C<sub>1</sub>-C<sub>28</sub>-alkyl, C<sub>6</sub>-C<sub>15</sub>-aryl, alkylaryl, arylalkyl, haloalkyl, haloaryl each having from 6 to 20 carbon atoms in the aryl radical and from 1 to 28 carbon atoms in the alkyl radical, C<sub>3</sub>-C<sub>10</sub>-

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cycloalkyl which may bear C<sub>1</sub>-C<sub>10</sub>-alkyl groups as substituents, halogen, C<sub>1</sub>-C<sub>28</sub>-alkoxy, C<sub>6</sub>-C<sub>15</sub>-aryloxy, silyl or mercaptyl groups,

a is an integer from 1 to 6 and

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z is an integer from 0 to 5, and

d corresponds to the difference a-z, but d is greater than or equal to 1.

10 3. A catalyst system as claimed in claim 1, wherein the cocatalyst comprises, as cations, Brönsted acids of the formula (Ic),



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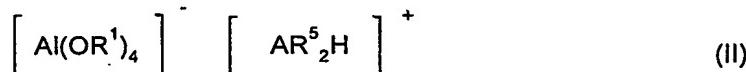
where

A is an element of group 15 of the Periodic Table of the Elements and

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R<sup>5</sup> may be identical or different and is each, independently of one another, C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>1</sub>-C<sub>20</sub>-haloalkyl, C<sub>1</sub>-C<sub>10</sub>-alkoxyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>6</sub>-C<sub>20</sub>-haloaryl, C<sub>6</sub>-C<sub>20</sub>-aryloxy, C<sub>7</sub>-C<sub>40</sub>-arylalkyl, C<sub>7</sub>-C<sub>40</sub>-haloarylalkyl, C<sub>7</sub>-C<sub>40</sub>-alkylaryl or C<sub>7</sub>-C<sub>40</sub>-haloalkylaryl.

25 4. A catalyst system as claimed in claim 3, wherein the cocatalyst has the formula (II),



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where

R<sup>1</sup> may be identical or different and is each, independently of one another, a radical R<sup>2</sup>R<sup>3</sup>(CF<sub>3</sub>)<sub>2</sub>,

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R<sup>2</sup> is a carbon or silicon atom,

R<sup>3</sup> is hydrogen, C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>1</sub>-C<sub>20</sub>-fluoroalkyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>6</sub>-C<sub>20</sub>-fluoroaryl, C<sub>7</sub>-C<sub>40</sub>-arylalkyl, C<sub>7</sub>-C<sub>40</sub>-fluoroarylalkyl, C<sub>7</sub>-C<sub>40</sub>-alkylaryl, C<sub>7</sub>-C<sub>40</sub>-fluoroalkylaryl or an SiR<sup>4</sup><sub>3</sub> group, where

- R<sup>4</sup> may be identical or different and is each C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>1</sub>-C<sub>20</sub>-fluoroalkyl,  
C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>6</sub>-C<sub>20</sub>-fluoroaryl, C<sub>7</sub>-C<sub>40</sub>-arylalkyl, C<sub>7</sub>-C<sub>40</sub>-fluoroarylalkyl, C<sub>7</sub>-C<sub>40</sub>-  
alkylaryl or C<sub>7</sub>-C<sub>40</sub>-fluoroalkylaryl,
- 5 A is an element of group 15 of the Periodic Table of the Elements and
- R<sup>5</sup> may be identical or different and is each, independently of one another,  
C<sub>1</sub>-C<sub>20</sub>-alkyl, C<sub>1</sub>-C<sub>20</sub>-haloalkyl, C<sub>1</sub>-C<sub>10</sub>-alkoxyl, C<sub>6</sub>-C<sub>20</sub>-aryl, C<sub>6</sub>-C<sub>20</sub>-haloaryl,  
C<sub>6</sub>-C<sub>20</sub>-aryloxy, C<sub>7</sub>-C<sub>40</sub>-arylalkyl, C<sub>7</sub>-C<sub>40</sub>-haloarylalkyl, C<sub>7</sub>-C<sub>40</sub>-alkylaryl or  
10 C<sub>7</sub>-C<sub>40</sub>-haloalkylaryl.
5. A catalyst system as claimed in any of claims 1 to 4 which further comprises an organometallic compound.
- 15 6. A catalyst system as claimed in any of claims 1 to 5 which further comprises an inorganic or organic support.
7. A process for preparing a catalyst system as claimed in claim 6, which comprises firstly bringing the support into contact with an organometallic compound and adding the organic  
20 transition metal compound and the cocatalyst to the reaction product.
8. A catalyst system for the polymerization of olefins which is obtainable as set forth in claim 7.
- 25 9. A process for the polymerization of olefins in which a catalyst system as set forth in any of claims 1 to 8 is used.

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